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(54) **METHOD FOR FORMING SEMICONDUCTOR THIN FILM**

(57) Abstract:

PROBLEM TO BE SOLVED: To form a shallow semiconductor thin film constituting the doped layer of high density, which is adapted to the solar battery of high efficiency, by irradiating a semiconductor target and a target containing dopant with laser beams.

SOLUTION: In a target 8, the Si target and the target containing P are arranged. The target containing P, which is generated by P_3N_5 , P_2AN_3 , PN and P single body, is used for the target as the supply source of P being n- dopant. When the Si target and the target containing P are irradiated with laser beams 1, Si and P are discharged from the respective targets as ions and they reach a substrate 5 while a plume 12 is formed. Then, they are deposited on the substrate 5 and the thin film is formed. Namely, the Si film is formed on the substrate 5 and P is doped. Thus, the Si thin film which is P-doped in high density is formed.

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